AUTHOR'S REPLY BY R. K. N. D. RAJAPAKSE

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We are very grateful to Professor Kausel for his interest in our work and expert comments. The following is our reply to the three main points in the discussion.

1. The original TLM method did not model an underlying half-space. It was later that other approximations (References 22, 23, etc. in the author's paper[1]) were developed to incorporate an underlying half-space in the TLM. The statements on p. 704 of our paper[1] reflect this fact. We agree that the numerical quadrature is unnecessary in the TLM and the solution of stiffness equation system can be obtained in terms of eigenvalues and propagation modes of the layered system. This enables the exact evaluation of wavenumber integrals.
2. We have not investigated the similarity between the poroelastic layer stiffness matrices for plane strain case and that in cylindrical co-ordinates. It may be possible to obtain the stiffness matrices for the latter case by using the manipulation suggested by Professor Kausel. However, we suggest that the general solutions for plane problem and the general solutions in cylindrical co-ordinates be compared before using the suggested manipulation. The identity of stiffness matrices for the plane strain case and that in cylindrical co-ordinates can be seen from the analytical general solutions for ideal elastic solids in the Fourier and Hankel transform domains respectively.
3. The development of accurate numerical integration techniques has been one of the most important aspects of wave propagation in layered media. The EWM technique suggested by Professor Kausel is a very good method for layered systems with negligible or zero internal damping. Poroelastic layered systems are generally damped systems due to non-zero values of the parameter 'b'.

REFERENCES

1. R. K. N. D. Rajapakse and T. Senjuntichai, 'Dynamic response of a multi-layered poroelastic medium', *Earthquake eng. struct. dyn.* **24**, 703–722 (1995).

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